Instant 10A POWER SUPPLY

LTM®4600

Complete Step-Down DC/DC Power Supply

$4.5V \le V_{IN} \le 28V$; $0.6V \le V_{OUT} \le 5V$

- Onboard Inductor
- Onboard Power MOSFETs
- Onboard DC/DC Controller and MOSFET Drivers
- Onboard Compensation Circuit
- 15mm x 15mm x 2.8mm LGA Package

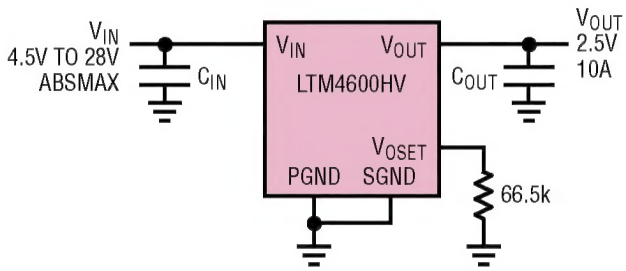
Complete Power Supply

- **Onboard Inductor**
  The inductor is built-in. The user is free from calculating the peak inductor current, determining the inductance value, saturation current or selecting the correct inductor type and core material.

- **Onboard Power MOSFETs**
  Proprietary synchronous N-channel MOSFETs are capable of delivering 10A load current at high efficiency. These MOSFETs are rated for high voltage operation ($28V_{MAX}$).

- **Onboard DC/DC Controller and MOSFET Drivers**
  Synchronous controller and two strong MOSFET gate drivers provide high efficiency operation.

- **Onboard Compensation Circuit**
  The LTM4600 is internally compensated.

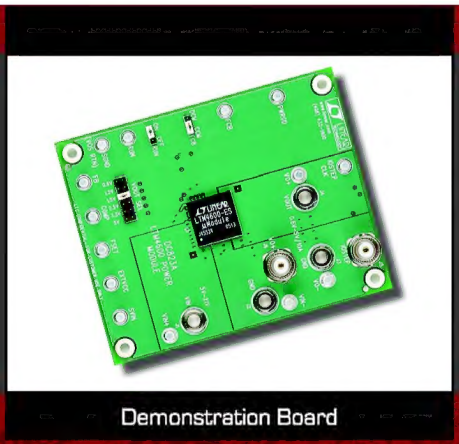


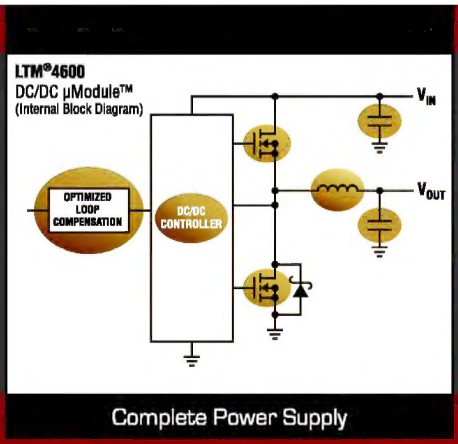
Power Rating

- **10A Output**
  The DC/DC controller's strong MOSFET gate drivers and on board low gate capacitance MOSFETs allow a high power density power supply operating at high efficiency. The LTM4600 easily achieves 90% efficiency over a wide range of load current.

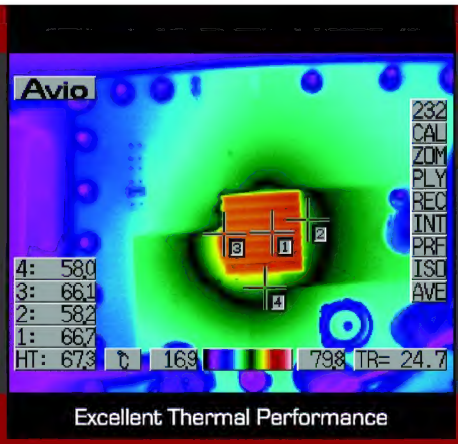
- **20A Output**
  Two LTM4600 µModules can easily be paralleled to produce a 20A power supply.

- **Thermal Performance**
  The LTM4600 is housed in an LGA package with excellent thermal performance. Thermal impedance is only 15°C/W with 125°C maximum junction temperature. Linear Technology also offers guidance on how to optimize thermal performance depending on the conditions of the application such as input and output voltages, output power, ambient temperature and airflow.


Demonstration Board



Complete Power Supply



Excellent Thermal Performance

Part Count

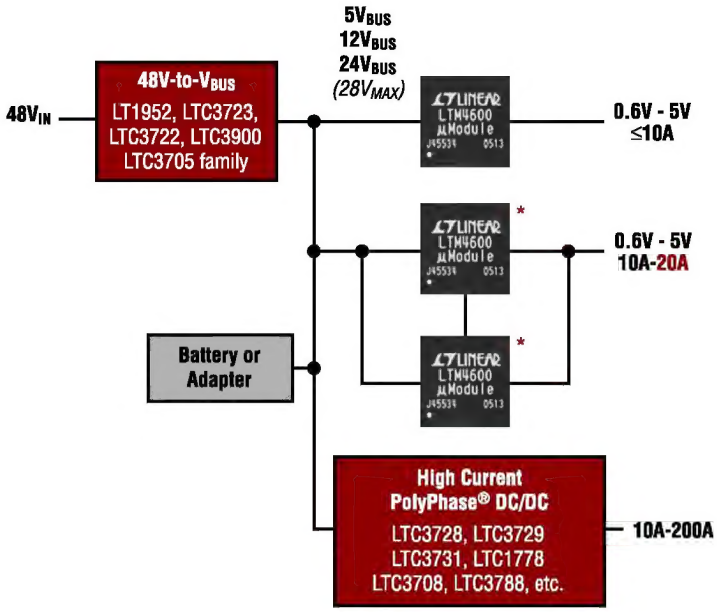
The LTM4600 and only one resistor create a complete power supply. The resistor is needed to set the output voltage from 0.6V to 5V.

Often system bulk capacitors are sufficient for the LTM4600; the µModule contains input and output bypass capacitors.

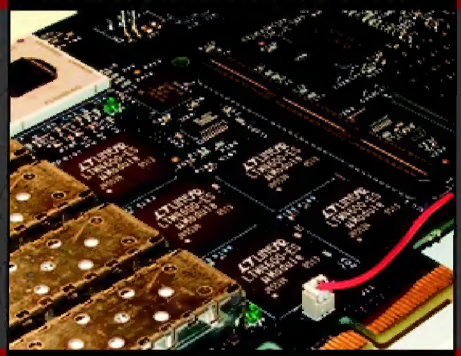
Voltage Rating

- **High Voltage**
  The LTM4600 is unique for its high input voltage operation. Most pre-assembled power supplies (modules) operate at maximum of 6V input. The few that operate above this voltage occupy more board area (40% more), have higher profile (up to 2 times) and are lower power (2W-5W).

- The LTM4600 is offered in two versions rated for different maximum input supply:
  $20V_{IN}$: LTM4600EV
  $28V_{IN}$: LTM4600HVEV

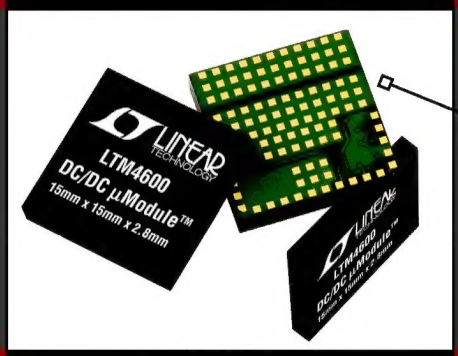


*Parallel Two LTM4600s for 20A Output

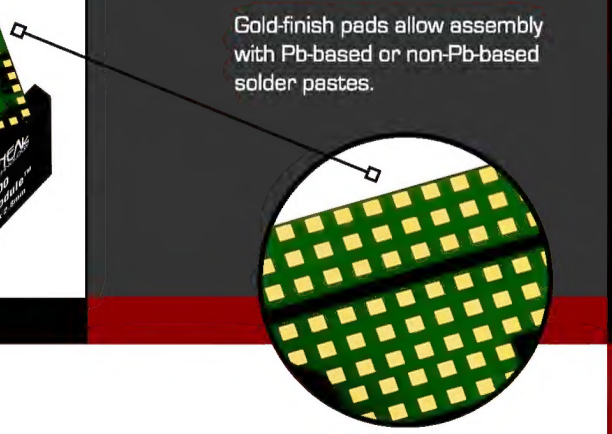


Courtesy of Netronome Systems Inc.

Easy Layout



Gold-finish Pads



www.linear.com/micromodule

Package

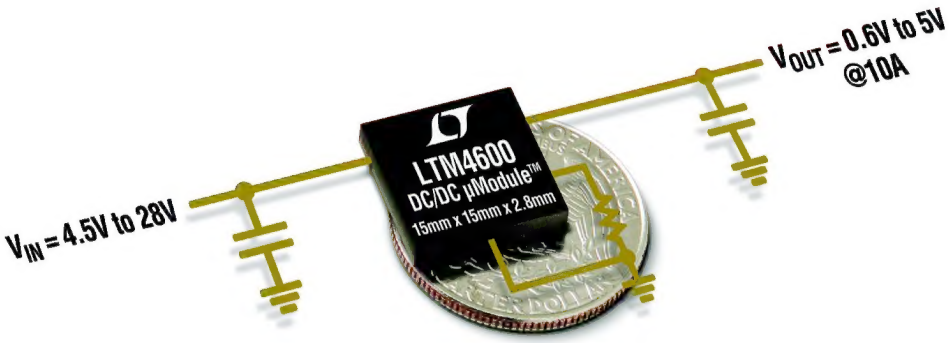
- **100% Surface Mount, Light Weight**
  The light weight (1.73g), IC-like and 100% surface mount packaging allows any pick-and-place machine to handle the LTM4600. It does not require special tooling.

- **Very Low Height (profile)**
  The LTM4600's 2.8mm thickness is especially beneficial in applications where the top of board is densely populated and leaves little room for a power supply. The LTM4600 can be soldered onto the backside of the board and takes only 15mm x 15mm.

- **Gold-finish Pads for Use with Pb-Based or Pb-Free Solder Paste**
  Unlike many Pb-free packages which include matte-tin lead finish, the LTM4600 has gold-finish pads which allows it to be used with either PbSn- or SnAgCu-based solder pastes for surface mount processing.

- **RoHS Compliant**
  Material declaration is available on **www.linear.com/micromodule.**

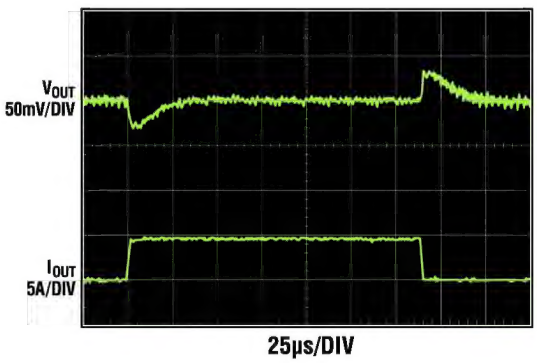
Instant 10A POWER SUPPLY



Complete, Quick and Ready.

The **LTM4600** is a complete 10A switchmode step-down power supply with a built-in inductor, supporting power components and compensation circuitry. With high integration and synchronous current mode operation, this DC/DC µModule™ delivers high power at high efficiency in a tiny, low profile surface mount package. Supported by Linear Technology's rigorous testing and high reliability processes, the **LTM4600** simplifies the design and layout of your next power supply.

Ultrafast Transient Response
2% V_{OUT} with a 5A Step



V_{IN} = 12V, V_{OUT}= 1.5V, 0A to 5A Load Step
(C_{OUT} = 3 x 22µF CERAMICS, 470µF POS CAP)

LINEAR TECHNOLOGY

Features

- 15mm x 15mm x 2.8mm LGA with 15°C/W θ_{JA}
- Pb-Free (e4), RoHS Compliant
- Only C_{BULK} Required
- Standard and High Voltage:
  LTM4600EV: $4.5 \le V_{IN} \le 20V$
  LTM4600HVEV: $4.5 \le V_{IN} \le 28V$
- $0.6V \le V_{OUT} \le 5V$
- I_{OUT}: 10A DC, 14A Peak
- Parallel Two µModules for 20A Output

Info & Online Store

www.linear.com/micromodule
Literature: 1-800-4-LINEAR
Support: 408-432-1900

LTM4600 Application Notes
Available for Download